

## II. AMENDMENTS TO THE CLAIMS:

### **Listing of Claims:**

1. (Original): A method of separating sperm cells, comprising:
  - a. obtaining semen from a male of a species of mammal which contains a plurality of sperm cells;
  - b. incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase;
  - c. determining a sperm cell characteristic of a plurality of said sperm cells;
  - d. separating said sperm cells based upon said sperm cell characteristic; and
  - e. collecting separated sperm cells.
2. (Original): A method of separating sperm cells as described in claim 1, wherein said temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase comprises the step of incubating said semen at a temperature above which sperm cell membrane lipids transition to a gel phase.
3. (Original): A method of separating sperm cells as described in claim 1, wherein said temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase comprises the step of incubating said semen at a temperature which maintains said sperm cell membrane lipids in said liquid phase.
4. (Original): A method of separating sperm cells as described in claim 1, wherein said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase temperature comprises incubating said semen at a temperature between about 5° C and about 25° C.

5. (Original): A method of separating sperm cells as described in claim 1, wherein said temperature is selected from the group consisting of about 5 ° C, about 6° C, about 7° C, about 8° C, about 9° C, about 10° C, about 11° C, about 12° C, about 13° C, about 14° C, about 15° C, about 16° C, about 17° C, about 18° C, about 19° C, about 20° C, about 21° C, about 22° C, about 23° C, about 24° C, and about 25° C.
6. (Original): A method of separating sperm cells as described in claim 1, wherein said species of mammal is selected from the group consisting of a bovine species of mammal, an equine species of mammal, an ovine species of mammal, a swine species of mammal, a canine species of mammal, a feline species of mammal, a deer species of mammal, an elk species of mammal, and a marine species of mammal.
7. (Original): A method of separating sperm cells as described in claim 1, wherein said species of mammal comprises a bovine species and wherein said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase temperature comprises incubating said semen at a temperature between about 17° C and about 19° C.
8. (Original): A method of separating sperm cells as described in claim 1, wherein said species of mammal comprises a bovine species and wherein said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase temperature comprises incubating said semen at a temperature of about 17° C.
9. (Original): A method of separating sperm cells as described in claim 1, wherein said species of mammal comprises an equine species and wherein said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase temperature comprises incubating said semen at a temperature of about 15° C.

10. (Original): A method of separating sperm cells as described in claim 1, wherein said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from liquid phase to gel phase comprises incubating said semen at said temperature above which sperm cell membrane lipids transition from liquid phase to gel phase between about one hour to about 18 hours.
11. (Original): A method of separating sperm cells as described in claim 1, further comprising the step of transporting said semen from a first location to a second location during said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase.
12. (Original): A method of separating sperm cells as described in claim 1, further comprising the step of adding an antibacterial to said semen prior to said step of incubating said semen at a temperature above which sperm cell membrane lipids transition from a liquid phase to gel phase.
13. (Original): A method of separating sperm cells as described in claim 1, wherein said step of determining a sperm cell characteristic of a plurality of sperm cells within said semen comprises determining a sex characteristic of said sperm cells.
14. (Original): A method of separating sperm cells as described in claim 1, wherein said step of separating said sperm cells based upon said sperm cell characteristic comprises separating said sperm cells based upon said sex characteristic.
15. (Original): A method of separating sperm cells as described in claim 1, further comprising the step of extending semen with an extender selected from the group consisting of KMT, and INRA96.

16. (Original): A method of separating sperm cells as described in claim 1, further comprising the step of concentrating said sperm cells by removing a portion of seminal plasma.
17. (Original): A method of separating sperm cells as described in claim 1, further comprising the step of staining said sperm cells.
18. (Original): A method of separating sperm cells as described in claim 17, wherein said step of staining said sperm cells comprises staining DNA contained within said sperm cells.
19. (Original): A method of separating sperm cells as described in claim 18, wherein said step of staining DNA contained within said sperm cells comprises staining said DNA within said sperm cells with Hoechst 33342 stain.
20. (Original): A method of separating sperm cells as described in claim 19, wherein said step of staining said DNA within said sperm cells with Hoechst 33342 stain comprises incubating said sperm cells with Hoechst 33342 for a period of between about 30 minutes and about 1 hour.
21. (Original): A method of separating sperm cells as described in claim 1, wherein said step of separating said sperm cells based upon said sperm cell characteristic comprises separating said sperm cells using an instrument selected from the group consisting of a flow cytometer, and a cell sorter.
- 22-147. (Cancelled)